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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JAMIE R. STRICKLER

Appeal 2015-005781
Application 12/671,393
Technology Center 1700

Before ADRIENE LEPIANE HANLON, LINDA M. GAUDETTE, and JAMES C. HOUSEL, *Administrative Patent Judges*.

HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

The Appellant filed an appeal under 35 U.S.C. § 134 from a final rejection of claims 1–6, 9, and 12. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

The claimed subject matter is directed to a method of producing an activator. Claims 1 and 9 are reproduced below from the Claims Appendix of the Appeal Brief dated January 13, 2015 ("App. Br.").

Claim 1. A method of producing an activator comprising:

a. combining at least a halogenated phenol, a first amine and a trialkylsilyl halide to produce at least a protected phenol, wherein the trialkylsilyl halide comprises $R^2R^3R^4SiX^2$, wherein

> R^2, R^3 and R^4 are ethyl, or R^2 is isopropyl, R^3 is methyl and R^4 is methyl or R^2 is phenyl, R^3 is methyl and R^4 is methyl, Si is silicon, and X^2 is Cl or Br;
>
> b. combining at least the protected phenol and M to produce at least a Grignard where M comprises magnesium;
>
> c. combining the Grignard and a borane composition to produce at least an intermediate borate, wherein the borane composition comprises at least about 95 mol% borane; and
>
> d. combining at least the intermediate borate, an acid composition, and a second amine to produce at least the activator.

App. Br., Claims App. A-1.

> Claim 9. The method of Claim 1, wherein the trialkylsilyl halide is Et_3SiCl.

App. Br., Claims App. A-2.

Claim 12, the other independent claim on appeal, is also directed to a method of producing an activator comprising steps a. through d. recited in claim 1 with the additional limitation that "steps c through d are conducted in a one-pot process without additional purification." App. Br., Claims App. A-2.

The claims on appeal stand rejected as follows:

(1) claims 1–6 and 12[1] under 35 U.S.C. § 103(a) as unpatentable over Jacobsen et al.[2] as evidenced by Neville;[3] and

[1] The Examiner includes claim 7 in the statement of the rejection. *See* Final Office Action dated August 19, 2014 ("Final"), at 2, 3. Claim 7, however, was cancelled in an amendment dated June 26, 2014.
[2] US 5,834,393 A, issued November 10, 1998 ("Jacobsen").
[3] Roy G. Neville, "Synthesis of 4-(2,3-Epoxypropoxy)phenyltrimethylsilane," 25 J. Org. Chem. 1063–64 (1960) ("Neville").

(2) claim 9 under 35 U.S.C. § 103(a) as unpatentable over Jacobsen as evidenced by Neville, and further in view of Krishnamurthy.[4]

C. DISCUSSION

1. Claim 1

There is no dispute on appeal that claims 1–6 are prima facie obvious over Jacobsen as evidenced by Neville. *See* App. Br. 7 ("Applicant is not arguing that the Office has not made a proper prima facie case."). Rather, on appeal, the Appellant's arguments focus on unexpected results. The Appellant argues:

> [T]he distinguishing features of the claims are the combination of the specific trialkysilyl groups and the greater than 95% borane purity. The combination of these two components leads to higher yield and reduced process steps.[5] The greatly improved and unexpected results arising from the combination rebuts the case for obviousness.

App. Br. 8. For support, the Appellant relies on a Declaration of Dr. Jamie R. Strickler dated March 13, 2012 ("Strickler Declaration"). App. Br. 7.

As stated in *In re Freeman*, 474 F.2d 1318, 1324 (CCPA 1973):

> In order for a showing of "unexpected results" to be probative evidence of non-obviousness, it falls upon the applicant to at least establish: (1) that there actually is a difference between the results obtained through the claimed invention and those of the prior art . . . ; and (2) that the difference actually obtained *would not have been expected* by one skilled in the art at the time of invention. [Emphasis added.]

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[4] US 5,359,065 A, issued October 25, 1994 ("Krishnamurthy").

[5] The Appellant argues that the overall yield is 96.5% and the present invention uses 8 steps compared to 17 steps in Jacobsen Example 1a and 32 steps in Jacobsen Example 1b. App. Br. 7. However, the Examiner finds Jacobsen reports an isolated yield of $HOC_6H_4B(C_6F_5)_3.Et_3NH$ at about 90%. Ans. 5 (citing Jacobsen, col. 27, ll. 51–57). Moreover, the Examiner finds the Appellant's Example for making activator [ArmeenH+][$B(C_6H_5)_3(C_6H_4OH)$] includes purification steps that are not expressly recited in the claims on appeal. Ans. 6.

See also Pfizer, Inc. v. Apotex, Inc., 480 F.3d 1348, 1371 (Fed. Cir. 2007) ("any superior property must be *unexpected* to be considered as evidence of non-obviousness").

In this case, the Appellant argues there is a difference between the results obtained through the claimed invention and the invention disclosed in Jacobsen. *See* App. Br. 7; Strickler Dec. ¶¶ 7, 8. The Appellant, however, has failed to direct us to any evidence demonstrating that the difference *would not have been expected* by one of ordinary skill in the art. *See* Ans. 5 (citing MPEP § 716.02).[6] In that regard, we note that neither Dr. Strickler nor the Specification characterizes the results as "unexpected." *See* Strickler Dec. ¶ 7 (describing the yield of the present invention as "significantly better" than the Examples in Jacobsen "due, in part, from using the simpler procedure and more desired chemistry"); *see also* Strickler Dec. ¶ 11 (describing the present invention as "an economically superior process and simpler procedure"); Spec. ¶ 18 (describing the present invention as providing "a substantial improvement in yield, raw material utilization, and especially cycle time" compared to known methods).

We recognize that the Appellant, in the Appeal Brief, contends that "unexpected results" arise from "the combination of the specific trialkysilyl groups and the greater than 95% borane purity [in the claimed invention]." App. Br. 8. However, the Appellant's argument, without supporting evidence, is entitled to little weight. *See In re Schulze*, 346 F.2d 600, 602 (CCPA 1965) ("Argument in the brief does not take the place of evidence in the record.").

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[6] According to MPEP § 716.02 (8th ed., Rev. 9, Aug. 2012), "[a]ny differences between the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really *unexpected*" (emphasis added).

The Examiner also finds the evidence relied on by the Appellant to demonstrate unexpected results in not commensurate in scope with the claims.[7] For example, the Examiner finds:

> In the [Strickler] Declaration and the instant Examples 1 a, 1 b, and Examples 2–4, all syntheses and reactions were carried out with triethylsilyl bromide. However the instant claim 1 recites other substituted alkyl groups, such as methyl, isopropyl and phenyl groups.

Ans. 4. Moreover, the halides recited in claim 1 include chlorine and bromine.

In response, the Appellant argues:

> Dr. Strickler used Et_3SiCl in the Affidavit and Applicant believes that $Me_2IPrSiX$ and Me_2PhSiX would behave similarly to Et_3SiCl since they have similar physical dimensions for steric protection from side reactions, and they are not too crowded that they can't be released with relatively mild chemistry.

Reply Br. 5. The Appellant, however, has not directed us to any evidence to support that argument. *See Schulze*, 346 F.2d at 602.

Finally, the Appellant directs our attention to MPEP § 2144.04(II)(B) entitled "Omission of an Element with Retention of the Element's Function Is an Indicia of Unobviousness." The Appellant argues that the claimed method "eliminates a number of process and purification steps" and "was still able to achieve a high purity product." App. Br. 9. However, the Appellant does not identify, with any specificity, the process and purification steps omitted from the claimed method or the functions of those steps that are retained.[8]

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[7] The Appellant argues the Examiner's finding includes a new line of argument. Therefore, the Appellant requests that the application be returned to the Examiner to continue prosecution. Reply Brief dated May 13, 2015 ("Reply Br."), at 4. Such a request is properly made in a petition under 37 C.F.R. § 1.181, not a Reply Brief. *See* 37 C.F.R. 41.40 (2015).

[8] The Appellant argues that "with the particular trialkylsily compounds and the 95% borane purity, the present invention . . . reduces the number of step[s]." App.

In sum, the evidence of record weighs most heavily in favor of the Examiner's conclusion of obviousness. Therefore, the § 103(a) rejection of claim 1 based on Jacobsen as evidenced by Neville is sustained.

The Appellant does not present arguments in support of the separate patentability of any of claims 2–6. Therefore, the § 103(a) rejection of claims 2–6 based on Jacobsen as evidenced by Neville is also sustained.

2. Claim 9

The Examiner finds Jacobsen and Neville do not teach that Et_3SiCl is reacted with a halogen phenol as recited in claim 9. The Examiner, however, finds Krishnamurthy teaches a method of reacting a bromine substituted phenol with Me_3SiCl or Et_3SiCl in the presence of an amine.[9] Final 5 (citing Krishnamurthy, cols. 10, 11). The Examiner concludes that it would have been obvious to one of ordinary skill in the art "to substitute the Me_3SiCl of Jacobsen/Neville . . . with Et_3SiCl taught by Krishnamurthy . . . as an alternative silylating agent" with "predictable results." Final 5.

The Appellant argues that Krishnamurthy makes different final compounds for a different purpose than the claimed method. Thus, the Appellant argues that Krishnamurthy is non-analogous art and there is no reason or motivation to combine Krishnamurthy with Jacobsen other than impermissible hindsight. App. Br. 10; Reply Br. 6.

Br. 7. On this record, it appears that the high purity product obtained by the claimed method is due to the specific trialkylsilyl compounds used and the purity of the borane, not the omission of a particular step (e.g., a purification step).

[9] The Examiner finds the yield of triethylsilyl phenol in Krishnamurthy Example 4 is higher than the yield of trimethylsilyl phenol in Krishnamurthy Example 3. Final 5.

The Appellant's argument is not persuasive of reversible error. According to the Court in *In re Wood*, 599 F.2d 1032, 1036 (CCPA 1979):

> The determination that a reference is from a nonanalogous art is . . . two-fold. First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved.

In this case, the Appellant argues that Krishnamurthy relates to compounds for photographic materials and processes, not catalysts, and thus is not within the inventor's field of endeavor. Reply Br. 6. However, the Appellant does not address whether Krishnamurthy "is reasonably pertinent to the particular problem with which the inventor was involved." *Wood*, 599 F.2d at 1036.

According to the Appellant, the present invention uses "a specific set of *trialkylsilyl protecting groups*, including Et_3SiCl, that leads to higher yields and a simpler process then [sic, than] those disclosed in Jacobsen." App. Br. 10 (emphasis added). The Examiner finds Krishnamurthy, like Jacobsen, teaches the use of trialkylsilyl halide *to protect* a hydroxyl group of a halogenated phenol. Ans. 8 (emphasis added). The Appellant does not direct us to any error in the Examiner's finding.

Based on the foregoing, we find the Appellant, like Krishnamurthy and Jacobsen, uses a trialkylsilyl group to protect a halogenated phenol. *See* Spec. ¶¶ 19, 20. Thus, one of ordinary skill in the art would have found the teachings of Krishnamurthy relevant in the search for alternative trialkylsilyl protecting groups.

The § 103(a) rejection of claim 9 is sustained.

3. Claim 12

Referring to column 27, lines 11–28, the Examiner finds Jacobsen teaches conducting steps c. and d. of the claimed method in a one-pot process without additional purification as recited in claim 12. Final 6.

In response, the Appellant argues:

> If one reviews Jacobsen, col. 27, lines 17 to 56, one can note that *after* intermediate is reacted with Et_3NHCl (acid and second amine in step d of claim 12), it is then mixed with dichoroethane and water containing CO_2, dried over sodium sulphate, filtered, and evaporated, which results in an oil.

App. Br. 11 (emphasis added). The Appellant argues that the purification steps required in Jacobsen are almost too numerous to count. App. Br. 11.

Significantly, the purification steps referred to by the Appellant occur *after* the step of reacting Jacobsen's intermediate with Et_3NHCl (corresponding to step d. in the method of claim 12), and thus are not excluded by claim 12. More specifically, claim 12 recites, *inter alia*, the step of "d. combining at least the intermediate borate, an acid composition, and a second amine to produce *at least* the activator; wherein steps c through d are conducted in a one-pot process without additional purification." App. Br., Claims App. A-2 (emphasis added). The use of the phrase "at least" in step d. of claim 12 permits the production of other substances in addition to the activator. *See* Ans. 10. Moreover, the phrase "without additional purification" is limited to steps c. through d. in claim 12. Claim 12 does not exclude purification steps after step d. Indeed, according to the method disclosed in the Appellant's Specification, additional steps are carried out

after step d. to purify the activator.[10] *See* Spec. ¶ 25 ("aqueous acid layer was separated in a separatory funnel and washed with distilled water four times"); Spec. ¶ 26 (volatiles were removed).

For the reasons set forth above, the § 103(a) rejection of claim 12 is sustained.

C. DECISION

The Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

AFFIRMED

[10] During examination, claims must be given "their broadest reasonable construction consistent with the specification." *In re Icon Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007).